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METROPOLITAN DENVER AIR PROGRAM WORKPLAN

NOVEMBER 1977

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
AIR & HAZARDOUS MATERIALS DIVISION
DENVER, COLORADO 80295

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This workplan describes the tasks to be accomplished by the Denver Task Force to develop an "Action Plan" to solve Air Pollution problems in Denver. The work described in this report falls into four major categories: (1) development of an Employer Incentive program to increase commuter vehicle occupancy; (2) development of an enhanced motor vehicle emission control program for Denver; (3) development of methods to improve transportation efficiency by providing preferential treatments for bicycling and high occupancy vehicles; and (4) development of new policies to deal with requests for construction grants for sewage treatment projects in non-attainment areas and development of an SIP policy for the Action Plan. The workplan also specifies an EPA program to heighten public awareness of air problems and solutions in Denver.

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Interested Parties:

Metropolitan Denver presently has the worst air quality problem in any of the six states covered by the Environmental Protection Agency's (EPA) Region VIII. This air quality problem is critical because of the health effects and the number of people affected. The situation is complicated by the fact that the emissions are mainly from automobile traffic and more straight-forward pollution control options are not applicable. The severity of this air quality problem dictates that its solution be given the highest priority within the region. The attached workplan represents the Region VIII perception of an approach to reduce air pollution in the Denver area to healthy levels.

The workplan is most specific in the role EPA will be playing; however, the problem must be addressed by a coordinated effort with responsibilities identified at each level of government. For this reason, we are proposing that an "Action Plan" be jointly developed by local, State and federal agencies by the end of February. Such a Plan should identify (1) specific strategies; (2) the role of each agency; and (3) a specific schedule to accomplish the plan. The Clean Air Act Amendments of 1977 specifically identify local governments as having a role in addressing transportation-related pollution issues, and the approach outlined here gives us this opportunity.

This Regional Office will immediately undertake a program to try to reduce the vehicle miles traveled (VMT) by its own employees. This effort will be aimed at improving transit ridership and vehicle occupancy. A number of approaches utilizing incentives and disincentives will be investigated and implemented as appropriate. In addition to the reduction in VMT measures, the EPA will also address several policy issues, including how best to coordinate with Colorado's State Implementation Plan revision efforts and how to handle construction grant applications in non-attainment air quality areas. Also, this agency, in conjunction with State and local efforts, will launch a major public involvement campaign.

The Regional Office program to reduce VMT will be in place by February 1978. The next major step will be to implement a similar program for other federal agencies, since about 43,000 people in metro-Denver work for the federal government. Our current plans call for extensive support to the federal agencies, including assistance in formulating effective carpool matching programs, identifying potential employer incentive programs and other assistance as needed. A major goal of the federal sector portion of the program is to set an example for the private sector.

The aforementioned efforts will constitute a start towards cleaning up metropolitan Denver's air problem. The metropolitan air pollution problems can only be solved through a coordinated effort with each level of government, private business, and individual citizens giving the program a top priority.

Alan Merson
Regional Administrator

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METROPOLITAN DENVER AIR PROGRAM - WORKPLAN

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INTRODUCTION

GOALS AND OBJECTIVES

The Denver air quality problem is one of the most severe in the United States. At least one study has shown Denver's carbon monoxide problem to be the worst in the country. Oxidant violations occur at more than one of the six monitoring sites in Denver most days in the summer, and Denver ranks in the worse 5 to 10 oxidant cities in the country. Particulate levels in Denver typically are more than 60% over the annual average primary standard. For all of the above pollutants, the automobile is the primary cause.

This work program is to be executed in conjunction with the designation of Denver as a "National Demonstration City for Air Quality." We intend to undertake a program to improve air quality in Denver to set a national example. The recommended program will be staged. First EPA will undertake a number of programs in the Regional Office to improve transit ridership and vehicle occupancy to set an example. As these internal programs take shape we will involve the balance of the Federal agencies in Denver and finally move the program into the private sector.

The primary goal of this program is to make a dramatic improvement in air quality in the Denver metropolitan area in the next few years. We will be investigating every conceivable strategy for possible application in Denver. From this investigation we will select for implementation those strategies which seem to offer the most promise for improving air quality and we will also consider what other benefits it might be reasonable to expect from the imposition of those strategies. Our overall objective will be to reduce emissions. To accomplish this we will attempt to reduce travel, increase auto occupancy and reduce emissions from individual automobiles. Other benefits which we will emphasize in designing our program include cost savings, energy savings, improving the urban life style and reducing travel times.

In conjunction with our efforts in the above areas we will launch a major public involvement program. We believe it necessary to increase EPA's constituency and develop grass roots support for our programs.

In summary, the real goal of the Denver air quality program is to improve human health conditions in the Denver area, and as a secondary benefit hopefully to improve visibility through the reduction of the emissions of the particulate matter.

THE ACTION PLAN

An Action Plan for Denver air quality will be developed by January 31, 1978. The Action Plan is the primary output of the execution of this work plan. The plan will consist of specific work elements for the implementation of a number of different programs. There are three major efforts which the program plan will cover. These are: Transportation Policy Management, Motor Vehicle Emission Control, and Employer Incentives. These three thrusts will constitute the main portion of the Denver air program. The plan will lay out, with some specificity, items which will, beginning next February, be accomplished in each of these three areas and will assign dates by which the items will be accomplished. The period between mid-November and January will be spent developing specific programs in these three areas, which we will begin implementing early next year. This work plan will not cover the specifics to be accomplished in each of the three major program areas, but rather, will lay out the items which we must accomplish to develop the specific programs. In other words, this document is a plan for a plan. There are three other efforts which cannot be included in any of the three major work areas listed previously, but which are equally important. The first of these is the development of a consistent policy to deal with a construction grants program in the Regional office. The goal of this program will be to have, by January 31, 1978, a written policy specifying how we will write construction grant conditions relating to air quality.

Another very important policy area relates to the Colorado State Implementation Plan (SIP). The State of Colorado is in the process of making significant revisions to the State Implementation Plan. EPA's efforts in the three program areas - employer incentives, transportation policies, and motor vehicle emissions control - must fit closely with the State Implementation Plan. In some cases, we may wish to promulgate strategies which EPA is carrying out. In other cases, we may decide that our programs are not appropriate for the State Implementation Plan. In any case, we need to establish a framework for making those decisions on a case by case basis. Hence, by January 31, 1978, we will have a written policy regarding Action Plan strategies and the Colorado State Implementation Plan. The third miscellaneous area which we must address is the development of a mechanism to include Headquarters' input into the process. Each of these three areas will be discussed in greater depth later in this chapter.

As we begin the efforts to develop the Action Plan, we will simultaneously launch a major public involvement program. This program will run parallel to all our efforts on a continuing basis until our program is complete.

INFORMATION GATHERING

The efforts of the next three months will largely be oriented toward gathering information. Gathering this information will allow us to draft the specific policies just discussed and to complete Action Plan items for three major program areas. This information gathering process will lead to a minimum of six specific Action Plan items by the end of January. The first three of these items will be specific plans and timetables to implement the employer incentive program, the transportation policy program, and the motor vehicle emission control program. The second three will be the construction grant policy, the SIP policy, as well as a formulized mechanism to involve EPA Headquarters in the Denver decision making process.

The information gathering process will consist of a number of different efforts. The primary effort will be centered on the development of a number of literature searches in the various program areas. It is vital that we understand what has been done in other cities relating to our three program areas. We must understand how successful air quality/transportation initiatives have been and how they might relate to the Denver situation. Much of this research will be done by EPA personnel here in the regional office. We will also need a significant amount of legal research in order to enable us to determine what kinds of things in each of these three major areas we can legally require under existing legislation, especially the Clean Air Act. In many cases, these efforts will be breaking new ground, since many of the policy questions that have arisen as a result of the Clean Air Act Amendments have not yet been addressed.

Another major category in the information gathering process will be interviews. It will be necessary to interview federal, state and local agencies here in the Denver area. Interviewees will include the Federal Highway Administration, the Department of Interior, Department of Energy, Department of Housing and Urban Development, Denver Regional Council of Governments, Urban Mass Transportation Administration, Denver Planning Office, and various local elected officials.

The primary purpose of this effort will be to increase the knowledge of regional EPA personnel who work in the Denver Air Program regarding what things are being done in the Denver area which might have a direct bearing on Action Plan activities. In addition, there is a great necessity to avoid duplication of effort with other federal, state and local agencies. For example there are a number of ongoing efforts in the area of carpooling which EPA would not wish to duplicate. EPA personnel must understand the nature and extent of these programs to avoid duplicating the efforts of the Air Pollution Control Division or Denver's Health Department.

Interviews will also be conducted with Headquarters personnel who have expertise in the transportation area. Primarily, we will be contacting the Office of Transportation and Land Use Policy and the Office of Air and Waste Management to solicit their suggestions and input. Additionally, it is necessary to interview state and local agencies in selected other states. As an example, the Association of Bay Area Governments has accomplished a number of things through the 201 Construction Grant process which we have not yet accomplished in this Region. Grant conditions have been written to require the grantees to get involved in air quality planning. It is essential that we draw on expertise developed by other state and local governments where appropriate.

Large amounts of information will be gathered and assimilated in this initial phase of the Action Plan development. For that reason, it is important to establish an information handling system. We expect to work with the EPA regional library to develop efficient means of retrieving the information which we will be collecting. EPA personnel have already made arrangements for shelf space in the library to store information relative to the Denver program. This information will be available for use by persons assigned to the Denver Air Pollution Program on an overnight basis. Other than that, the material will not be allowed to be removed from the library area.

PROGRAM DESIGN

PUBLIC INVOLVEMENT

"Generally, the public understands...(the direct relationship) between automobile use and air pollution in the region. Less well comprehended are such factors as the health hazards and property risks of air pollution, the effect of land use patterns or influences of capital investment decisions on transportation, air quality and energy. Perhaps least clear to the public are the methods by which citizens could become involved in working toward solutions to these interwoven problems in a meaningful way, although many people are genuinely concerned about the health and welfare of future urban populations."

ROMCOE Forum - Summer 1977

"We have met the enemy and he is us."

Pogo

Introduction

Success in the implementation of a major effort to clean up the air in the Denver metropolitan region is highly dependent on some form of public participation and support at each step in its development. More simply, only the public can make it work.

Public involvement in this effort may be based on the following premises:

1. The quality of air in Denver is frequently poor. The public knows this and will continue to be reminded by the visual scene, and by us and the media. The public needs information at the next plateau- why it is bad, how it affects people and things, and what can be done about it.

2. We may well be on the verge of the most concentrated growth period since the founding of Denver in 1859. Through September 1977 there has been a 60% increase in housing starts in the metropolitan area beyond the comparable 1976 figure. The population of this area is expected to grow by 3.5% during 1978. A major commercial real estate firm has stated that 7500 new parking spaces will be needed in the downtown area to service the new office buildings.

3. There is a unique sensitivity to environmental quality here, largely centered on the quality of the air.

4. Air problems in Denver can be solved, by adjustments in present systems and by creation of innovative systems for the future.

5. Solution of the air problem will require a new order of cooperative community action and leadership.

The recent increase in media coverage of the Denver air problem is gratifying, but the public is left hanging - "it's bad, but nobody is doing anything." We have the difficult task of convincing people that collective efforts are possible. We must take a positive approach to change transportation habits. Denver has a long history of concern with air pollution, perhaps in part because of its attraction for tourists, conventions, new business and for those with respiratory problems. We need to view our efforts in perspective, aiming to recover that quality which attracted us in the first place.

The prospect of Denver as a pioneer demonstration city for air improvement seems to fit well with the state of public consciousness. The politcal climate appears favorable, and the Agency commitment is clear. The Region VIII public involvement program will call for efforts in gathering information, developing resources, investigating methods and in developing,implementing and monitoring specific activities.

Information

The public involvement program will require a broad range of factual and policy information. Much of this will come from our own staff, but outside sources will be utilized. Information "packages" are needed on topics such as:

1. The physical environment - topography, meteorology, plants, man-made structures, air quality data and the like.

2. History of Denver Air - the product of an investigation into the past trends in the nature and concentration of pollutants (e.g. domestic coal-burning) and the history of past concerns and actions to correct the problem. There is a considerable body of information available in newspaper files, libraries, historical societies, aerial photo files and in personal experiences (senior pilots, weather types, etc.). (This study will be done by a graduate student in local history).

3. Relevant experiences - a twofold search for useful data for public presentation, and for useful techniques in applying our program (e.g. San Diego air, 1976 Olympics, RTD campaigns).

4. Technical data - nature and sources (point and mobile) of pollutants, successes and failures of controls, micro-climatic characteristics of urban air, etc.

5. Cost data - economics of vehicle operation and maintenance comparative costs of transportation modes, etc.

6. Advanced systems - accumulation of information for public presentation on future transportation technologies (a long-range view to complement short-range actions).

7. Particulate sources - an investigation of the potential for a metropolitan-wide effort to reduce visible particulates originating from unplanted surfaces (streets, sidewalks, vacant lots, rights-of-way). Such an effort would require broad community action.

8. Psychology of the automobile - a critical review of experience and literature, quite possibly requiring a citizen survey.

9. Health - Douglas Costle said "we have created a huge health effects research laboratory." We need to examine current knowledge with assistance from qualified people. We are planning a national health/air seminar. We may wish to support specific studies.

Resources

Considerable effort will be made to identify and work with supportive private and public organizations and individuals. This will be an interactive process, as we will need to learn of current efforts paralleling ours and to fit the pieces together. These are good people willing and anxious to work with us. This effort is partially under way now.

We envision, as part of the public involvement program, the formation of advisory groups (formal or otherwise) of health experts, of citizens, and perhaps from industry and local governments.

Methods

Essential to the operation of this program will be an appropriate mix of methods of communication with the public. It will be necessary to work very closely with the Regional public affairs staff, and to rely on their expertise in techniques and timing, and to rely on their participation in the actual operation of the public involvement program.

Methods will include:

1. Materials - the production of publications, films (including time-lapse cinematics), posters, buttons, bumper stickers, T-shirts and the like). The publications will include simple folders on various topics, but we are also exploring the preparation of a Citizen's Manual which would provide some depth on such items as altitude, I/M, health, transportation alternatives, etc. Full use will be made of PSA slots on radio and TV, with "tag-on" spots suggesting that the audience write AIR, EPA, BOX_____ for further information.

2. Presentations - speakers and participants in meetings, panels, and perhaps debates will be necessary. Care must be taken to ensure that a proper mix is maintained - neighborhood groups (including core city), service clubs, Scouts, technical groups, church groups, garden clubs, whatever. Inasmuch as public input is of highest importance, dialogue must be sought; the town meeting concept is useful.

3. Visual monitoring - use of photography, traffic aircraft, etc. The public's visual awareness must be kept open, and refined.

4. PSI - we have progressed in obtaining media cooperation in the use of the Pollutant Standard Index. Further efforts will be required to provide the service which the media has requested (hourly PSI?, weekend data, video tapes supplementing the index, etc.). State air staff cooperation is evident, although some financial assistance may be need to support added service.

5. Pollutant monitoring - we will examine the possibility of utilizing mobile and/or personal monitoring to dramatize actual individual exposures (e.g. commuter trip, Bronco practice field).

6. Education - preparation and presentation of suitable information for schools and colleges in the Denver area. This is a supportive resource that we have neglected in the past. Never underestimate the capacity and power of a student ("the children are watching" - they are learning from our example).

7. Joint efforts - many of these efforts will benefit from joint sponsorship with other groups or agencies. This process will add strength and avoid duplications on certain facets of the program.

8. Independence Day - the desirability of an Air Pollution Independence Day (July 1978?) will be further explored. On this day, people would be asked to make special efforts to pool, ride the bus, bike, or walk. Downtown displays and speakers would be available. Possibly the proposed 16th Street Mall could be simulated by excluding traffic on the planned route.

9. Survey - it may be desirable to undertake a citizen (driver? voter? youth?) opinion survey of:

    1. Willingness to change, adapt, pay.

    2. Attitudes and perceptions.

    3. Importance of personal transportation.

Program Implementation

In a very real sense, the program is already under way, with or without our input. The public is being informed and is responding. It is important in the operation of the Regional effort to avoid the image of EPA charging in on a white horse to start something, when efforts are going on. Our strong commitment, however, does provide a new focus for action.

We will be carrying out our own activities - many of them simultaneously with other efforts. We need to be sensitive to public opinion, and our program must be open, informative and accessible.

In as much as our first automobile travel reduction "module" is aimed at EPA employees, we will begin to involve these people immediately. The emphasis will be on the need for this segment of Denver's population to set an example which will produce results. We will use:

1. Questionnaire - to obtain information on commuting habits planned for distribution by Monday, November 28.

2. Materials - available brochures, films (brown-bag sessions-DOT films), posters, handout sheets, etc. (initial distribution at Trinity meeting).

3. Slogan contest - to be announced at Trinity meeting.

4. Progress reports - it is important that our people be informed on our efforts and on the results of their efforts. An employee newsletter, along with Trinity meetings, will be used.

5. Employee input - case experiences or suggestions will be welcome at any time. It is proposed that the EPA employee participation program be introduced at the next Trinity Church meeting.

Experience in the development and implementation of the EPA commuter program will provide valuable information for the operation of the all-Federal and all-other programs.

POLICY DEVELOPMENT

Two major policy issues must be addressed during the initial phase (first three months) of the Denver Air Program: (1) an EPA construction grants policy and (2) an agreed upon State/EPA State Implementation Plan policy. These policies are essential ingredients of the Denver Air Program since they will ensure consistency between programs (Construction Grants and the Air Program) and between actions of the various groups responsible for developing measures to improve Denver's air quality.

The specific details for this activity are presented on the program element forms which follow.

Program Element: Policy Development

Activity: Construction Grant Policy

Objective: Insure that Construction Grants Program is consistent with achieving air quality goals

Activity Description

Construction Grants are awarded to local municipalities or sanitation districts for the purpose of planning, designing and constructing or upgrading sewage treatment plant capacity. In many cases this additional capacity provides for growth in a metropolitan area. EPA must decide if it wants to participate in funding excess capacity which will provide for growth in an area that has increasing violations of air quality standards. If air quality standard violations result from excessive automobile travel, it may be determined that a geographical area should not have additional sewage treatment capacity made available until such time as limits on the use of the automobile are imposed. A precedent was recently established in Region VIII by imposing conditions on a Step One 201 facility grant. We now need to develop a framework necessary to make that same determination for other facilities. EPA has prepared a draft Environmental Impact Statement for eight proposed sewage treatment plants in the Denver area. We will be making funding and sizing decisions on these plans shortly. We must have our grant condition policy established before these decisions are made.

The development of a construction grant policy would begin with general guidance from the Regional Administrator. A task force established would be made up of representatives from the Construction Grants Program, Environmental Evaluation Branch, Air Program and EPA Headquarters Personnel. The task force would prepare drafts, circulate them to interested parties within the Regional Office, obtain comments from the all involved and finalize the policy after concurrence from the Regional Administrator.

We propose to produce a draft policy within three weeks of the initiation of the program to develop the January 31 Action Plan for Denver. We expect to have completed and formalized the policy by the time implementation of the Denver Action Plan begins in February of 1978.

Program Element: Policy Development

Activity: State Implementation Plan (SIP) Policy

Objective: To define which programs will become a part of the SIP and to assure consistency between EPA, State and local activities.

Activity Description

A State Implementation Policy must be developed in order to interface State efforts, federal efforts and local efforts. The primary mechanism or vehicle for this interface must be the State Implementation Plan. The State of Colorado is required to have an approved implementation plan to attain and maintain all air quality standards. The current Transportation Control Plan (TCP) which is a subset of the State Implementation Plan (SIP) is deficient and is being revised through the Air Quality Maintenance Planning process. The State has completed their Air Quality Maintenance Analysis and is now gearing up to develop the new SIP revisions.

Obviously, many of the activities contemplated to be accomplished by EPA in this work plan may also be in the planning stage at the State Agency. In order to improve State/EPA coordination, a policy regarding what items in the EPA program should be included in the State Implementation Plan, what items are important for the State to pursue, and what items are important for EPA to pursue must be formulated. The ultimate output of this task should be documented and jointly signed by the Air Pollution Control Commission and representatives from the Environmental Protection Agency as well as the Denver Air Quality Advisory Committee formulated by the Governor. One appropriate mechanism to develop such a document is to form a committee made up of representatives of the State Air Pollution Commission, the Air Pollution Control Division, local governments, and the Environmental Protection Agency's Denver Task Force.

We propose to have a draft of an agreement approximately six weeks after initiation of the program. The final document will be signed on or before January 31, 1978. The development of such a policy should preclude duplication of efforts by EPA, state and local agencies. It also may provide a mechanism for EPA to move ahead with promulgations in a number of areas so that items will be included in the SIP at an early date.

It is vital that we give considerable thought to those items to be included in the State Implementation Plan in light of the recent Clean Air Act Amendments of 1977. Sections 174, 175 and 176 of the Amendments give EPA and other federal agencies very significant powers regarding federal funding of any projects in non-attainment areas and must be an integral part of our SIP policy.

MOTOR VEHICLE EMISSION CONTROL

Although there have been emission standards for new cars since the 1968 model year, compliance with those standards was not required at high altitudes. At Denver's altitude, the higher ratio of fuel to air causes poor driveability and greatly increased emissions. There is not enough oxygen in the combustion chamber to ignite all the fuel, or in the exhaust system for a catalytic converter to react. The result is that emissions at high altitude are approximately twice that of sea-level.

On October 18, 1974 EPA promulgated regulations (39 FR 37300) for the certification of 1977 and later vehicles intended for sale above 4,000 feet in elevation. The regulations required that new vehicles be tested under high altitude conditions. The regulations allow manufacturers the alternative to design vehicles intended for use at high altitude with (1) fixed calibrations capable of meeting emission standards only at high altitude, or (2) automatically variable calibrations capable of meeting emission standards at both low and high altitude without adjustment or modification. A vehicle model not intended for sale at high altitude did not require high altitude certification, and initial sale of such vehicles for high altitude use was prohibited.

Most manufacturers chose to certify vehicles with fixed calibrations for high altitude, since this is the least expensive option. Thus, 1977 vehicles were certified for use either at sea-level or for 5,200 feet (the altitude specified for high altitude certification), and most vehicles certified for one altitude do not meet standards at the other altitude.

Only about 2.5% of all cars sold in the United States are sold at high altitude. Because of limited projected sales of certain models and options, manufacturers simply did not bother to certify many vehicles for high altitude, thus limiting the diversity of cars provided for sale in Denver. As a result, some individuals purchased vehicles at low altitude which were not designed for use or modification for use at high altitude. There is no assurance that used 1977 vehicles sold in Denver will be adjusted, or will be capable of being adjusted, for high altitude.

Thus, the intended impact of the EPA regulation on reducing emissions was not completely realized and the public blamed EPA for not having a full selection of new models and options. New car dealers at high altitude also claimed they had lost sales.

The Clean Air Act Amendments of 1977, Public Law 95-95, revoked EPA's high altitude regulations until the 1981 model year. EPA may implement high altitude requirements from the 1981 model year to the 1983 model year pursuant to Section 202 (f) of the Clean Air Act. However, such requirements cannot require more control than a 90% reduction from 1970 model year vehicle emissions at high altitude. Beginning in 1984, all light duty vehicles must meet the statutory emission standards (0.41 HC, 3.4 CO, and 1.0 NO_x) regardless of altitude.

EPA can only require that vehicles are built to meet the emission standards when properly maintained and operated. EPA's testing of in-use vehicles at low altitude indicates that the Federal motor vehicle control program is not obtaining the expected emission reductions because of improper adjustments and lack of proper maintenance. Inspection and Maintenance (I/M) of in-use vehicles has been shown to be the most cost-effective way to insure that vehicles are properly maintained. The Colorado program includes only 1977 and later model year vehicles because it was the consensus of the Colorado decision-makers that, since these are the vehicles required to meet emission standards at high altitude, they are the only group of vehicles for which sufficient emission reductions could be gained to make a program worth considering. The moratorium on high altitude compliance may cause postponement of the Colorado I/M program.

The reason for the moratorium on high altitude certification seems to be that new car dealers at high altitude claimed severe hardship due to loss of sales, since manufacturers did not offer many models and options at high altitude. EPA has been aware of the problems caused by limited model and option availability in high altitude areas. Meetings were held by EPA and the National Automobile Dealers Association with the high altitude dealers, and EPA personnel visited many individual dealers throughout the high altitude area. While it is true that there has been some loss of sales, the claims of severe hardship are untrue. In addition, the limited availability has not been caused by the inability of the manufacturers to meet emission standards at high altitude, but largely by marketing decisions based on the fact that only 2.5% of nationwide sales are at high altitude. Limited EPA testing of in-use 1977 high-altitude certified vehicles indicated that such vehicles were cleaner than their sea-level counterparts. High Altitude Certification for the entire line of vehicles sold at sea-level would have been no more expensive than for those actually certified. The EPA regulations required only one test vehicle per engine family and emission control system combination. The models and options which were certified for high altitude in 1977 represent nearly all engine families, and so the addition of other models and options would probably not have required additional test vehicles. The actual cost for certification would not have changed significantly.

The Clean Air Act Amendments also require "High Altitude Performance Adjustments." The motor vehicle manufacturers are required to provide instructions for each class or category of vehicles for which there are Federal emission standards. The instructions should specify the vehicle and engine adjustments and modifications necessary to insure emission control performance at different altitudes, pursuant to regulations promulgated by the Administrator. The promulgation of such regulations, coupled with an inspection/maintenance program to insure that the appropriate modifications are made, could reduce emissions from 1968 through 1975 model year vehicles by 25 to 50 percent.

We will not pursue the provision for "New Motor Vehicle Emission Standards in Non-attainment Areas," Section 177 of the Act as amended. States with non-attainment areas may adopt the California Emission Standards if they have an approved non-attainment area SIP revision. The standards must be adopted by both California and the State two years before the effective model year. Since we are now in the 1978 model year, the first year which could be subject to the California standards would be the 1981 model year. Promulgation of high altitude emission standards is provided for by the Clean Air Act for the 1981 model year, and high altitude standards would be more effective than adoption of the California standards.

In summary, there are four activities of the Motor Vehicle Emission Control Program:

(1) The development of high altitude emission standards for new vehicles to be effective with the earliest possible model year.

(2) The development of regulations to require the manufacturers to provide high altitude performance adjustments for vehicles not certified to meet emission standards at high altitude.

(3) Federal Vehicle Inspection/Maintenance to obtain early emission reductions from Government Owned Vehicles and additional experience for running an area-wide I/M Program.

(4) Inspection/Maintenance of in-use vehicles to insure that the new vehicle emission standards continue to be effective.

Program Element: Motor Vehicle Emission Control

Activity: High Altitude Emissions Standards

Objective: Reduction of emissions from new cars

Activity Description

Efforts to promulgate high altitude emission standards for new vehicles should begin as soon as possible. The Colorado Congressional delegation should be briefed on the necessity to reinstate EPA's high altitude certification program with the 1979 model year. The feasibility of meeting the 1979 standards at high altitude has already been demonstrated, since the same standards were in effect with the 1977 model year. To minimize the impact on the buying public, the Act should be amended to require that all models and options sold at low altitude should be certified for high altitude. To minimize the economic impact, the requirement for sale of only new vehicles which have been certified for high altitude could be limited to areas with a requirement for an inspection/maintenance program in the SIP. Parallel with the legislative effort, EPA's Office of Mobile Source Air Pollution Control should be urged to draft the appropriate regulations.

Program Element: Motor Vehicle Emission Control

Activity: High altitude performance adjustment

Objective: Reduction of emissions from 1968-1983 cars not certified for high altitude.

Activity Description

EPA now has the authority (Sec. 215 CAA) to require that motor vehicle manufacturers design and submit adjustments and modifications to lower emissions for 1968 and later vehicles not designed for high altitude. Headquarters should be urged to promulgate such regulations as soon as possible.

Emission benefits of I/M Programs for pre-1974 model year vehicles by EPA and Colorado have shown disappointingly low benefits because such vehicles were never designed or adjusted to meet standards at high altitudes. 1975 and 1976 vehicles have shown greater benefits from I/M but high altitude performance adjustments would increase the effectiveness for all 1968 through 1976 model year vehicles. The approximate results of high altitude testing of a simple high altitude device are shown below:

	Model Year	Emission reduction	
I/M alone	1968 - 1974	11% HC	14% CO
I/M alone	1975 - 1976	21% HC	24% CO
I/M w/modification	1968 - 1974	20% HC	50% CO
I/M w/modification	1975 - 1976	30% HC	60% CO

Similar or greater benefits could be expected from 1977 through 1984 model year vehicles which are not certified for high altitude. (Even with a high altitude certification program, many of the in-use vehicles in the Denver area will be low altitude vehicles purchased outside the high altitude area). Requiring installation of high altitude performance adjustments by new car dealers prior to initial registration through I/M will be investigated.

Program Element: Motor Vehicle Emission Control

Activity: Federal Vehicle Inspection/Maintenance

Objective: Reduction of Emissions from Federal Vehicles

Activity Description

Information on inspection/maintenance in general and on the Federal sector vehicle emission related maintenance practices would be gathered during the first three months of the program. This phase would culminate in the proposal of a federal vehicle I/M Program by the end of April, 1978.

The Federal I/M Program would begin to be set up in October of 1978. Actual vehicle testing should begin no later than January 1, 1979, one year prior to the start of the full scale Denver Regional I/M Program. The Federal I/M effort would provide early reductions in emissions not otherwise obtained, and would also provide valuable experience for running the area-wide program.

Program Element: Motor Vehicle Emission Control

Activity: Inspection/Maintenance

Objective: Maintenance of maximum emission reduction through augmentation of Colorado's I/M Program.

Activity Description

The Colorado I/M Program is to begin in January of 1980, and will affect 1977 and later model year vehicles. The enabling legislation requires that the legislature approve any emission standards, and requires the resolution of several questions regarding the I/M Program: the cost and effectiveness of I/M under high altitude conditions, the durability of catalytic converters on in-use vehicles, and the effectiveness of I/M on high mileage 1975 and 1976 vehicles.

The Office of Mobile Source Air Pollution Control, Region VIII, and the State of Colorado are cooperating in a test program to answer these questions. The data from the present and past high altitude test programs, test programs concerning I/M at sea-level, and the experiences of other states with I/M programs in actual operation must all be pulled together to develop and support a viable I/M Program for Denver.

Denver is a non-attainment area for carbon monoxide and oxidants, and thus SIP revisions must be developed under Section 172 of the Act. A requirement of such a SIP revision is that it "provide for the implementation of all reasonably available control measures as expeditiously as practicable."

The high altitude test programs have shown that, for 1968 through 1976 vehicles undergoing both high altitude modifications and I/M, the emission reductions are similar to those now being credited by EPA to I/M at sea-level. Colorado, however, does not presently plan to cover such vehicles in their I/M Program; only 1977 and later model year vehicles will be affected. Thus, the present Colorado I/M Program does not provide for all reasonably available control measures; most of the emissions would be left uncontrolled.

Another issue arises from the fact that Colorado plans a decentralized private garage program, less effective in terms of quality control than a centralized inspection program. Most of the ongoing I/M programs in other states are centralized (Arizona's is operated by a private contractor, Oregon and New Jersey have state-run programs). The principle reason that Colorado chose a decentralized system is that the safety inspections are now carried out by private garages. The issue of centralization vs. decentralization should be reconsidered in the augmentation of Colorado's I/M Program.

EMPLOYER INCENTIVES

An employer incentive program offers potential in the short term for decreasing air pollution in the Denver metropolitan area. The purpose of an employer incentive program is to encourage employees to share rides and ride mass transit to and from work. Thirty seven percent of the trips in the Denver metropolitan area are work related, hence a successful program can accomplish a great deal.

There are a number of incentives which can be provided to employees by their employers. For example, employers can offer carpool matching services, provide information on bus routes, and implement vanpooling programs. Employers can directly subsidize programs such as preferential free or reduced-rate parking for members of carpools and vanpools and reduced public transit fares. In Denver some employers subsidize as much as 50% of the cost of riding public transit.

Everyone associated with an employer incentive program derives benefits. The employee who participates has an opportunity to reduce his commuting costs, to conserve valuable energy resources and to help reduce air pollutant emissions. The employer benefits from improved public relations and saves operating costs by reducing the amount of parking that he must provide adjacent to his facility. The general public benefits because air quality is improved, and general traffic congestion and other negative social impacts of our transportation system are minimized.

There are a number of ongoing efforts in Denver related to employer incentives. Regulation 9 of the Air Pollution Control Commission in Colorado established employer requirements for carpool matching. That Regulation is attached as Appendix D. The program has been successful for some employers who were interested, however the manpower to implement it properly has not been available.

The EPA Employer Incentive Program as it is presently conceived consists of four separate stages. The first stage involves the demonstration of the effectiveness of the various kinds of employer incentives within the EPA Region VIII Office. The demonstration program will attempt to show other Denver metro area employers what can be done through employer incentives. We will (1) attempt to initiate an EPA vanpooling program (2) improve EPA's carpooling matching program (3) provide extensive information on transit availability to employees and (4) provide various kinds of incentives including but not limited to free parking spaces for carpoolers and vanpoolers.

During the second stage of this program the EPA demonstration efforts will be expanded to the entire federal community in Denver. There are 43,000 civilian and military federal employees in the Denver metropolitan area. We will expand our efforts begun during the EPA demonstration into the total federal community. This will require the establishment of a larger staff of

EPA employees due to the labor intensive nature of this kind of service. In the third phase of the employer incentive program EPA will encourage employer incentives for state and local government employees. The final stage of the program involves the expansion of the employer incentives to private employers. The third and final stages of the employer incentive programs are envisioned to be a combined EPA, state and local effort.

In the remainder of this section the four stages of the EPA Employer Incentive Program will be discussed in greater detail. The emphasis will be on the numerous questions that must be answered over the three months during Phase one of the Denver Air Program.

The next three months will help us to more clearly define each of the four stages of an employer incentive effort. It is nearly impossible for us to describe, in this document, our specific efforts in Stages 2 - 4. Our efforts over the next three months can be quite clearly defined since we have done enough preliminary work to identify the major options available to us. Although Stages 2 - 4 are discussed below, one must realize at the outset that these discussions are tentative and that the in-depth investigations of the next three months and the EPA demonstration may substantially alter our course.

Program Element: Employer Incentives

Activity: EPA Demonstration and Ihformation Gathering (Stage 1)

Objective: Gather Information on Carpool incentives and reduce EPA Employee vehicle miles traveled

Activity Description

Since the EPA Demonstration is an integral part of our internal "learning" process it is difficult to separate it from basic information gathering in any meaningful way. At least during Stage 1 and 2 (EPA demonstration and Federal Program), teams of EPA professionals will spend considerable time in employers' offices gathering data and establishing incentives, ie., implementing a program. It is this basic approach that will be developed and refined during Stage 1.

The major unanswered questions at this point are: (1) What employer incentives to encourage ride-sharing (vanpooling and carpooling) and transit usage are available? and (2) Which of these can be implemented in light of the various constraints (legal, economic, institutional, and so on)? The efforts over the next three months will be geared toward answering these two questions.

Our information gathering will begin with a review of basic reports dealing with the subject. This review will reveal the most successful programs, which will be investigated further.

Concurrently with the information gathering process, EPA Region VIII employees will be asked to complete a questionnaire concerning their commuting habits. (See Appendix C for a copy of this questionnaire) The results of this questionnaire will be used for a number of purposes. First, the summary information obtained from the results will indicate to us which specific incentives to pursue for the EPA demonstration. Second, the results will help us categorize individual's commuting habits such that we can provide the most service to individuals currently driving alone. Finally, the knowledge gained from the responses will enable us to improve the questionnaire itself and to streamline techniques for analyzing it.

The incentives to be investigated include:

(1) Parking for High Occupancy Vehicles
(2) Vanpooling for EPA employees
(3) Carpool matching
(4) On-site bus ticket sales
(5) Expansion of RTD route/schedule information
(6) Investigation of EPA downtown shuttle
(7) Provision of additional services/amenities for bikers

The EPA demonstration is scheduled to be in place by 2/28/78.

Program Element: Employer Incentives

Activity: Federal Employee Incentive Program (Stage 2)

Objective: Reduce federal employee work trip vehicle-miles-traveled

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Activity Description

The lessons learned during the EPA demonstration program will be useful in implementing incentives applicable to the entire federal community. There are several essential elements of this program. First, the techniques for gathering data on employee commuting habits and summarizing that data must be computerized. In addition, carpool and vanpool matching as well as transit route information services must be computerized. Furthermore, EPA must provide the staff resources to do the job and to provide continuing, permanent followup.

As in the EPA demonstration, the Federal program (Stage 2) will begin with a questionnaire (after "public" awareness efforts, described elsewhere). The data from this questionnaire will be analyzed and a program will be tailored to each federal facility based on: (1) commuting habits of the employees, (2) location and size of the facility, (3) attitude of the management and employees, (4) previous efforts to encourage ride-sharing by the facility and (5) physical aspects of the facility (parking provided, distribution of employees within the facility, etc.)

In addition to those incentives listed previously for the EPA demonstration, other possibilities for federal facilities are to:

1. Introduce parking fees for single occupant vehicle parking at government owned installations.
2. Allocate all close-in federally-owned parking spots to high occupancy vehicles. Relocate other parking facilities further away from offices than they presently are.
3. Investigate RTD subscription bus service from residential areas to high density Federal employment centers. This could be combined with staggered work hours or flexitime to provide the needed RTD bus capacity.
4. Provide regular low-polluting circulator service to handle travel on federal facilities.
5. Work with RTD to improve regular bus service to all federal employment centers. Use work schedule changes as appropriate to facilitate RTD activities.
6. Develop a system to involve new out-of-town employees moving to Denver in a ride-sharing program. Provide transit/carpool/vanpool information to assist persons in choosing a residential location.
7. Develop, along with GSA, a plan for locating new federal office space such that VMT is minimized.

The Federal incentive program is scheduled for complete implementation by 7/1/78.

Program Element: Employer Incentives

Activity: State and Local Government Employee Incentive Program (Stage 3)

Objective: Reduce State and local government employee work trip vehicle-miles-traveled

Activity Description

It is difficult to be very specific regarding this program at this early date. The general concept is to extend the successful aspects of the Federal government incentive program to State and Local government employees. Nearly all of the specific items discussed under the EPA Demonstration and the Federal Program are applicable to other governmental bodies. There may be other possibilities as well, because, for example, restrictions on use of State or local government owned motor vehicles may differ from federal restrictions.

EPA certainly has a major role to play in the Stage 3 program. That role is basically to serve as a catalyst and technical resources to State and local governments thus EPA staffing should remain the same as Stage 2. Hopefully we can create a cooperative local/state/federal effort to implement a Stage 3 program with the State taking the lead on State employees and local governments taking the lead with local employees. Cooperation developed under this program is an essential for the final stage of the employer incentive program-private employer incentives.

Assuming a cooperative Federal/State/Local effort, this program could be totally implemented on or before 12/31/78.

Program Element: Employer Incentives

Activity: Private Employer Incentive Program (Stage 4)

Objective: Reduce private sector employee work trip vehicle-miles traveled

Activity Description

Stage 4 should begin with two givens. First, Regulation 9 should be supported through greater enforcement and/or expanding the scope of the regulation. Second, it is conceivable that private employers will have voluntarily adopted various incentives as a result of Stages 1-3. Since we intend to "get out the word" on our program, others may follow.

If the EPA concept of providing on-site assistance to employees (a kind of consulting service) is extended to some or all private employers, then EPA staffing will have to be expanded to help provide the service. Similar expansions in state/local government staffing will be necessary. Intergovernmental personnel transfers (e.g. IPA's) may be desirable. To better manage Stage 4 and other parts of the Denver Air Program, an innovative locally-based agency with employees detailed from local/state/federal government may become a real option. All of these events appear too distant to accurately predict at this point in time. We should be in a much better position to be specific in six months to a year.

TRANSPORTATION MANAGEMENT

This section of the Action Plan might well be entitled "miscellaneous VMT reduction efforts." Some of the items to be investigated will ultimately be included in the SIP in accordance with the SIP Policy to be developed as another work element, and others will not. The work to be done under this work plan will define what items will be included.

Several specific work efforts are introduced below, which will be further developed in the coming months. There are numerous planning and construction efforts in the Denver Area which must be interfaced with EPA's activities to reduce VMT in the metro area.

There are a number of reasons why it is necessary, if not essential, to have a formal mechanism to interact with the EPA headquarters personnel. Perhaps the most important reason is that there are a number of people in the EPA headquarters who have valuable experience in transportation and air quality. The Regional Office would like to be in a position to draw on this planning expertise. Furthermore, since we have relatively new legislation (the Clean Air Act Amendments of 1977), there are a number of legal questions which center on EPA's authority in the area of transportation control planning. Involving headquarters on a continuing basis should ensure that the Denver program maintains a high level of visibility with the Administrator and his staff as well as with involved Assistant Administrators. There is no doubt that the Regional Office will need additional manpower from headquarters, on a temporary or permanent basis, to assist regional personnel.

The involvement of headquarters is essential if Denver transportation projects that benefit air quality are to receive preferential funding. Although such projects are already afforded priority funding under the Clean Air Act Amendments of 1977, a successful demonstration requires a commitment to additional funds for Denver.

Another very important reason for headquarters involvement will be centered on the necessity to interact with other federal agencies at a policy level. Our headquarters personnel, particularly in Office of Transportation and Land Use Policy, have developed policy level contacts with other federal agencies such as the Department of Transportation. The support of these other federal agencies is a necessity if we are to accomplish our objectives. The Regional Office must also directly coordinate with Regional Offices of other Federal Agencies such as the Departments of Energy and Transportation, and with local and State transportation agencies.

An area which will be investigated in the coming three months is the possibility of developing regulations which would apply to new and existing Federal indirect sources of air pollution and to new and existing sources of volatile organic materials which are owned or controlled by the Federal government.

Program Element: Transportation Management

Activity: Headquarters Coordination

Objective: Obtain assistance and program support

Activity Description

By the end of January we will have established the formal mechanism for this coordination. We will develop specific work groups both at the policy and staff levels. We fully expect to have manpower commitments from headquarters to insure that those people assigned to the work groups will have sufficient time available for the Denver air effort. Specific work will be assigned to each of the various groups and dates and milestones will be associated with the tasks. The following is a list of organizations in headquarters which will be involved in our coordination efforts.

1. Office of Transportation and Land Use Policy
2. Office of General Counsel
3. Mobile Source Enforcement Division
4. Office of Air and Waste Management
5. Office of Air Quality and Planning Standards
6. Office of Mobile Source Air Pollution Control
7. Office of the Administrator
8. Construction Grants Office
9. Office of Federal Activities

Involving headquarters on a continuing basis should ensure that the Denver program maintains a high level of visibility with the Administrator and his staff as well as other involved Assistant Administrators. There is no doubt that the Regional Office will need additional manpower from somewhere to complete the program and plan and on schedule. With a policy/management level commitment to the Denver demonstration the regional office would expect to be able to obtain additional manpower from headquarters on a temporary or permanent basis to assist regional personnel.

Program Element: Transportation Management

Activity: Coordination with Departments of Transportation and Energy

Objective: Reduction of Transportation Emissions

Activity Description

In the Region VIII area the Federal Highway Administration personnel are very receptive to progressive transportation planning. Hence, there are many things which have been accomplished in the Denver area relating to air quality and transportation through the previously discussed process mandated by 23 USC 109(j). Our Denver Task Force will expect to improve our coordination with both the Federal Highway Administration and the newly created Department of Energy in the next three months. The initial work plan goal will be to increase EPA's understanding of the possibility of developing multi-agency support for the implementation of transportation air quality strategies in Denver. As a simple example the Department of Energy has available funding to support vanpooling programs for reduction of energy consumption. This program has not been pursued in the Regional Office simply because of a lack of manpower.

Program Element: Transportation Management

Activity: Development of Federal Indirect Source and Organic Substance Reg.

Objective: Reduction of Emissions from Federal Facilities

Activity Description

Indirect sources of air pollution are locations such as football stadia, federal activity centers, etc. which attract large quantities of motor vehicle traffic. Indirect sources do not generate air pollution by themselves but the automobiles that bring the people to use the facilities do. The Clean Air Act Amendments of 1977 give EPA specific authority to regulate other federal agencies which are building indirect sources. Considerable research is necessary in this area to determine the nature and extent of EPA's authority, as well as the best regulatory mechanism. This item will be extensively investigated, and early in 1978 a recommendation will be prepared regarding EPA's approach to developing regulations in this area. The schedule includes dates for proposing a federal regulation and adopting that regulation.

We will investigate the possibilities of relocating existing federal facilities to other outstate areas for purposes of air quality improvement in Denver. The General Services Administration will be encouraged to increase the role of air quality in making decisions about acquisition of new federal office space.

It may be necessary for EPA to develop a Federal regulation to control new and existing emissions of volatile organic substances from Federal Facilities. The schedule included in this document also indicates that the Denver Task Force will prepare specific recommendations regarding new regulations in this area.

As a result of this activity, EPA will develop and promulgate federal regulations for any of the above areas which are determined to need them.

Program Element: Transportation Management

Activity: The NEPA Process

Objective: Reduction in Transportation Emissions

Activity Description

Most of the accomplishments of the area in transportation control for air quality have occurred as a direct result of National Environmental Policy Act. Historically, beginning in 1970 and 1971, EPA has suggested alternatives to reduce air pollution impacts from transportation-related projects in the Denver area. As a result of our comments and those of other environmentally oriented groups, we have managed to get a number of studies commissioned and some projects actually built. EPA comments on the South Santa Fe Environmental Impact Statements have produced a significant commitment for high occupancy vehicle treatment in that corridor. Likewise we have the same commitment regarding potential ramp metering projects and possible carpool lanes on I-70 and 6th Avenue. The Denver Task Force will attempt to assemble a unified policy for environmental impact statement reviews in the metro area. This should be of some assistance to those preparing EIS's in that it would eliminate some of the variability in the EPA decision making process.

Program Element: Transportation Management

Activity: Coordination with RTD

Objective: Decreased Auto Use

Activity Description

The Denver Task Force will develop improved liaison with the Regional Transportation District which will hopefully allow us to include items in the Action Plan that will improve ridership and bus service and hence make bus trips more attractive. Employer incentives for improving transit patronage have already been discussed in a different chapter of this work plan. The area of investigation which will be intensified under this work plan element relates to construction improvements in RTD's facilities, and the acquisition of additional buses or vans as well as the development of preferential treatment for buses. We do not know at this point the extent to which we can assist the Regional Transportation District in these specified areas. However, we hope to develop a specific action plan items to assist RTD in the fulfillment of both our missions.

Program Element: Transportation Management

Activity: Coordination with Denver COG

Objective: Transportation Emissions Reduction

Activity Description

The Denver Regional Council of Governments has committed to redeveloping the long range transportation plan for the Denver area. This process is called "the plan restatement." The process is separated into two phases. The first phase involves modification in a minor way of the existing transportation plan to reflect fiscal realities. Several highway projects have been deleted because there does not appear to be sufficient funding to complete those projects in the near future. Other projects are being modified or deleted as a result of citizen complaints or other citizen actions. Once this "pared down" plan is complete, it will be evaluated using transportation and air quality models to determine whether or not there will be air quality violations associated with its completion. This concludes Phase I of the restatement process. At that point, if there are projected air quality violations in the future, the plan will be completely reworked. If the decision is ultimately made to completely rework the transportation plan, the Denver Task Force will make every attempt to heighten its involvement in the plan restatement. The goal of this work element will be to assign highest priority to those projects which have some hope of improving air quality as they are built.

The long range transportation plan of the Council of Governments includes a TSM element made up of "transportation control plan like" strategies and projects. FHWA has available funding for these projects and is emphasizing the importance of their completion to solving the air pollution problem.

In the coming months the Denver Task Force will become more familiar with the existing Transportation Management Systems Plan and will formulate a program to encourage implementation of transportation strategies which are important in solving the air pollution problem. EPA will use its legal power to attempt to insure that TSM elements are built ahead of large new highway projects. Some of the type projects that are currently included in the transportation systems management element include vanpooling, new construction or modification of existing roadways to accommodate preferential treatment for high occupancy vehicles, bus shelters and other improvements to the transit system.

Program Element: Transportation Management

Activity: Transit Planning for New Residential Areas

Objective: Decreased Auto Use

Activity Description

The EPA Regional Office will develop a work element in the Action Plan which will establish a transit planning consulting office, either in the regional office or in conjunction with Regional Transportation District. The function of the office will be to provide recommendations to the developers on how they can provide transit service in conjunction with RTD and encourage the new residents of the development to commute to and from work in other than a single occupancy vehicle. This same group will also investigate the possiblity of modifying federal, state and local regulations for zoning and planning and building permits so that the guarantee of transit service and the commitment to that service can be made prior to the issuance of certificates of occupancy being issued.

Program Element: Transportation Management

Activity: Coordination with Denver Planning and Traffic Engineering

Objective: Reduction of Transportation Emissions

Activity Description

Coordination and liaison will be improved in the coming months between the EPA Regional Office, the Denver Planning Office, the City Traffic Engineering Office. It is not clear at this point, what specific end this improvement and coordination may serve. However, it is a well known fact that the City Traffic Engineering Department has almost total autonomy over traffic engineering in the Denver area. As an example, if it were decided to convert specific streets in Denver to streets for bicycles, the City Traffic Engineering Department would have only to put up signs and advertise the changes. The Denver Task Force will pursue efforts to make traffic engineering changes for air pollution outside federal or state mandates which might apply to the city.

Program Element: Transportation Management

Activity: Bicycle Planning

Objective: Decreased Auto Use

Activity Description

Denver has had for some time, a long range bicycle path plan. The plan has been partially implemented (50%) and has been successful, however, it has been largely oriented toward pleasure bicyling, rather than commuter bicycling. A number of groups in the Denver metro area have now developed a heightened interest in establishing a bicycling system, to allow people to commute to and from work on their bicycles. The EPA Regional Office will investigate several ideas which have been proposed to improve commuter bicycling in the area. These include employer incentives which have been previously discussed and the dedication of specific streets to bicycling only. Likewise EPA will attempt to plan commuter education programs for bicylists and to encourage a structural improvement of the transportation system to allow increased compatability with the bicyclists. These items include, in addition to better bicycle paths, bicycle handling facilities on some transit vehicles, development of safe storage for bicycles at park & ride lots, and selected bus stops and the provision of amenities such as showers and locker rooms by large employers.

APPENDICES

APPENDIX A

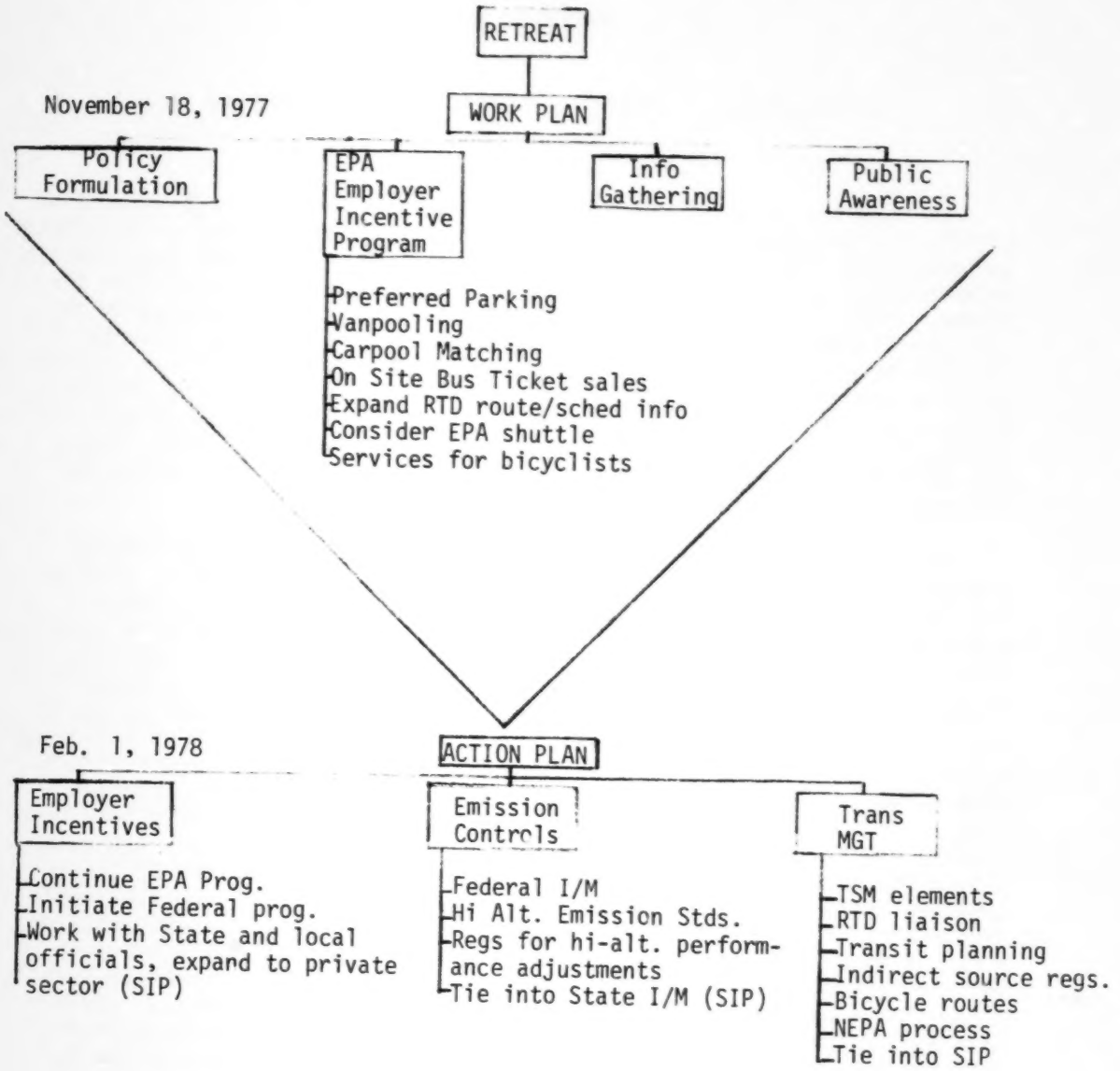
DENVER AIR PROGRAM WORK PLAN SCHEDULE

The schedule on the following two pages is intended to provide the reader with a general idea of the proposed timeframe for implementing the major programs which are being proposed to clean up Denver's air. There are a number of different efforts which will all be developed simultaneously but somewhat independently. Since the first stage of the program involves data gathering and scoping each of the various efforts, in some instances, it is difficult to associate dates certain with the various stages of the effort. In some cases, the various stages of a specific effort will not be defined until early 1978 at the completion of the data gathering process. For example, the staged program for development of employer incentives is more easily characterized than the activities of the Transportation Management Policy Group. The data gathering effort will largely determine the activities of the latter.

DENVER AIR PROGRAM SCHEDULE

Activity No.	Completion Date	Activity Description
1	11/14/77	Brief Regional Administrator
2	11/15/77	Draft Work Plan
3	11/18/77	Final Work Plan
4	11/21/77	Informal Briefing for Colo. APCD
5	11/23/77	Brief Regional Administrator
6	11/28/77	McGinnis Presentation on Work Plan
7	11/29-12/9/77	Briefings for Outside Organizations:
		FRC — Governor's office GSA — Congressional delegations DOT/IPG — Chambers of Commerce DOE — APCC and DRCOG HUD — Citizens Groups HEW — McNichols DOD — HQ-EPA DOI — Interested State Agencies
8	1/31/78	Action Plan Program Finalized
9	1/31/78	Internal EPA Organization in Place
10	1/31/78	Complete Policies on SIP and Construction Grants and Develop Mechanism for HQ Input
11	2/28/78	EPA Internal Demonstration Fully Implemented
12	2/28/78	Announcement of EPA Demonstration & Forthcoming Federal Agency Program
13	3/01/78	Initiate Activities of Transportation Management Policy Group

Activity No.	Completion Date	Activity Description
14	3/15/78	Final Design of Public Awareness Program
15	3/15/78	Address Neighborhood Groups
16	3/15/78	Implement Public Awareness Program
17	4/01/78	Propose Federal Indirect Source Regulation
18	4/30/78	Propose Implementation of Federal I/M Program
19	7/01/78	Federal Agency Incentive Program in Place
20	7/05/78 (approx.)	Air Pollution Independence Day
21	8/01/78	Finalize and Implement Federal Indirect Source Regulation
22	10/01/78	Begin Implementation of Federal I/M Program
23	12/31/78	State and Local Incentive Program in Place
24	12/31/78	Propose Augmentation of State I/M Program
25	4/01/79	Finalize Augmented I/M Program
26	1/01/80	Implement Augmented I/M Program
27	1/01/80	Private Employer Incentive Program in Place



January 1980 Denver program in place for public and private sectors.

APPENDIX B

Transportation Control Plan Development Background

In response to the Clean Air Act of 1970 and the timetables specified therein for the development of transportation related portions of the State Implementation Plan, the Air Pollution Control Division of the State Health Department of Colorado wrote the original transportation control plan for Denver. This plan contained a number of different measures including bus and carpool lanes, inspection and maintenance, retrofits, improvements to the mass transit system, and the development of a bikeway program. Subsequent to that action, EPA promulgated two additional regulations so that the approved adopted State Implementation Plan for Colorado would show attainment of the national ambient air quality standards by 1977. These two additional strategies were gasoline rationing and vapor recovery for the transfer of petroleum products.

Very little progress has been made toward implementing the original transportation control plan. Progress to date includes the demonstration bus lane pair on Lincoln and Broadway and some plans to install ramp metering devices on I-70 and 6th Avenue. The first two stages of a vapor recovery program including bulk terminals and gasoline service stations have been implemented. The Air Pollution Control Division is implementing certain portions of the Air Pollution Control Commission Regulation No. 9. This regulation requires incentive programs for carpools and high occupancy vehicles to be carried out by all employers of more than 50 people in the Denver area. The program is in place and most employers have submitted plans. It is not yet known how successful the Division's efforts have been because they have not had sufficient staff to analyze adequately the accomplishments of the various carpooling incentive programs planned by Denver area employers. Two other portions of that same regulation require the development of a parking management plan for Denver and the development of a Park & Ride plan. Both these plans are to be implemented according to the regulation. However, the Denver Regional Council of Governments made a commitment only recently to get involved in parking management. RTD's Park & Ride program is developing, however, the District maintains that they are not developing the Park & Ride program because of Regulation 9, but rather because it is a program that does further mass transit.

The retrofit program has essentially been dropped. The legislature has, however, finally made a commitment to an idle mode inspection/maintenance program in the Denver area beginning in 1980 which would inspect and require maintenance on 1977 and later model year automobiles.

A few of the mass transit improvements to which commitments were made in the original Transportation Control Plan have been implemented. However, the Regional Transportation District does not have a total commitment to the development of a "bus only" system. The District believes that early acquisition of too many buses could preclude fixed line transportation options in the future.

The bikeway program is approximately 50 percent implemented, however, it is primarily oriented toward pleasure bicycling rather than reducing VMT through the encouragement of the use of the bicycle as a mode to travel to and from work.

The Air Pollution Control Commission and Division have committed to a total rewrite of the existing transportation control plan as a result of the federal requirement that the State develop an air quality maintenance plan for the Denver metropolitan area. This air quality maintenance plan will, at some point in the future, take the place of the transportation control plan that is currently on the books, but largely being ignored. The air quality maintenance planning process involves two steps. The first is analyzing existing air quality and projecting the future air quality to allow comparisons to the ambient standards to be made. If violations are noted, a plan must be developed in the second stage of the process to insure that air quality will be maintained at or below the standards in the future. The analysis of the Denver metro area is complete, and the maintenance planning process is now beginning. This process must be an integral part of the EPA's activities in the Denver metro area to improve air quality.

It is important to understand the historical perspective which caused transportation control plans throughout the country to fail. Many court cases were filed against the Environmental Protection Agency shortly after the transportation control plans were approved by this agency. These court cases have proceeded through the judicial system and three were ultimately heard before the Supreme Court. However no hard decision was made by the court relative to EPA's authority to require transportation control measures, and in fact, the most significant issues were remanded back to lower courts. Because of the time consuming nature of the judicial processes, we are not likely to have clear-cut definitions of EPA's authority in transportation control planning area for some years to come. Thus, our efforts should be concentrated in the areas where our legal authority is clear. One of the main purposes of the Denver air quality demonstration program will be to show what kind of strategies can be implemented by a federal agency to solve urban air quality problems. Hopefully, many of the answers which we derive from this program will be applicable in other urban areas. Because of the foregoing, our initial thrust will be aimed at the federal enclave in Denver. There are approximately 43,000 federal employees in Denver including the military. If we can make a significant

change in the commuting habits of the average Denver federal or military employee, we should have some positive effects on air quality. Our successes and failures in this program will allow us to develop strategies which can then be implemented by EPA and the State in the private sector.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE: 28 NOV 1977

SUBJECT: Denver Air Program Questionnaire

FROM: 8AH-A

TO: EPA Region VIII Employees

The Air Branch is beginning a program to provide a new service to employees of EPA Region VIII. We hope to provide special service to employees who:

- CARPOOL OR MIGHT WISH TO
- WISH TO VANPOOL
- WISH TO RIDE THE BUS IF...
- WISH TO BICYCLE TO WORK IF...

The reason for this program is obvious. We want to set a community example by doing what we can to REDUCE AIR POLLUTION IN DENVER!

If this voluntary effort works well at EPA, we plan to extend the concept to the rest of the 43,000 federal employees in Denver area.

To help us get started, please take a few minutes to complete the attached questionnaire.

In accordance with the intent of the Privacy Act of 1974, we need to provide you with some general information regarding this questionnaire. First, the questionnaire is completely voluntary. Your responses will be seen only by the Denver Task Force members and the undersigned and reported only as summary statistics for the entire agency. We may, however, provide specific information to you based on your response. For example, we may provide names of individuals who live near you who desire to form a carpool.

DON'T WORRY - You won't be graded on the "ecological quality" of your work trip. We really need your frank answers to put together a good program for our employees.

Please return the completed questionnaire to your Branch Secretary by Wednesday, November 30, 1977. If you have any questions or comments, call Dale Wells, Dave Kircher, John Philbrook, Chuck Stevens or Sally Rawlings at extension 3711. Thank you.

David A. Wagoner

David A. Wagoner, Director
Air & Hazardous Materials Division

EPA Form 1320 6 (Rev. 3-76)

DENVER AIR PROGRAM

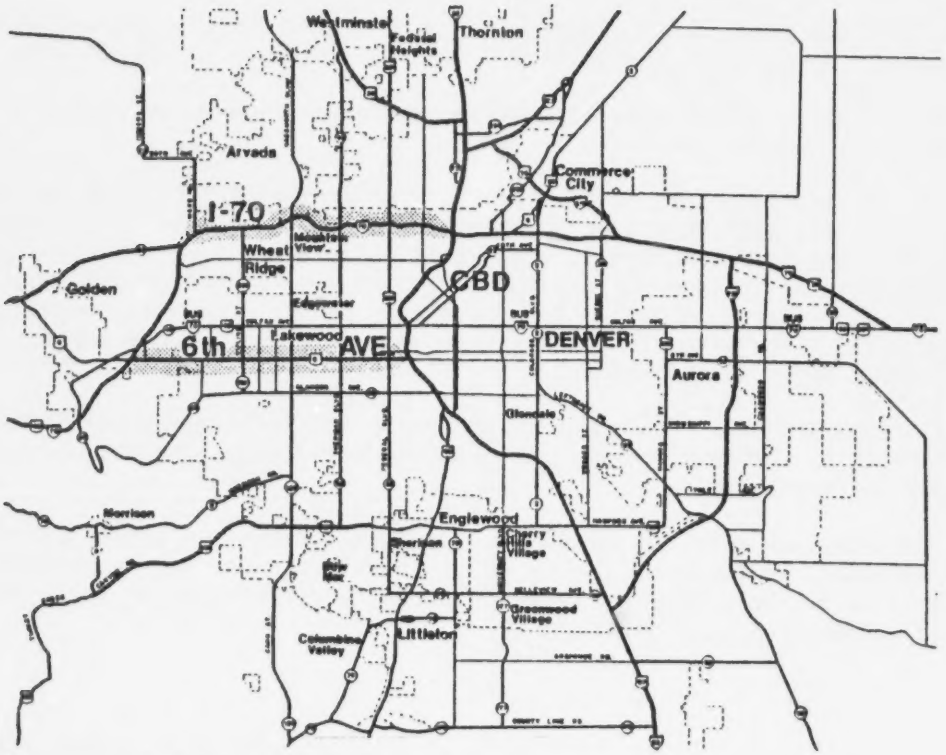
EMPLOYEE QUESTIONNAIRE

1. NAME _____

2. RESIDENCE ADDRESS _____

3. ONE-WAY DISTANCE FROM RESIDENCE TO LINCOLN TOWERS _____

4. PLEASE INDICATE THE APPROXIMATE LOCATION OF YOUR RESIDENCE WITH AN "X" ON THE MAP BELOW



DENVER, COLORADO

5. CHECK THE WAY(S) YOU TRAVEL TO WORK DURING AN AVERAGE WEEK.

(IF YOU ADD THE NUMBERS BY EACH OF THE BOXES YOU HAVE CHECKED THE TOTAL SHOULD BE FIVE)

TAKE BUS:

- ☐ 5 DAYS
- ☐ 4 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 1 DAY

DRIVE ALONE:

- ☐ 5 DAYS
- ☐ 4 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 1 DAY

CARPOOL:

- ☐ 5 DAYS
- ☐ 4 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 1 DAY

BICYCLE:

- ☐ 5 DAYS
- ☐ 4 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 1 DAY

WALK:

- ☐ 5 DAYS
- ☐ 4 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 1 DAY

6. WHEN YOU DRIVE ALONE TO WORK, WHAT ARE YOUR MAJOR REASONS?

- ☐ WORK HOURS DO NOT COINCIDE WITH BUS SCHEDULE OR CARPOOLING.
- ☐ MUST DROP OFF/PICK UP CHILDREN AT SCHOOL OR DAY CARE.
- ☐ BUS SERVICE IS UNAVAILABLE OR TOO INCONVENIENT.
- ☐ ENJOY DRIVING ALONE.
- ☐ NEED TO DRIVE ONE OR TWO DAYS PER WEEK TO TAKE CARE OF PERSONAL BUSINESS (e.g. ERRANDS ON THE WAY HOME)
- ☐ OTHER (SPECIFY)_____

7. WHEN YOU DRIVE ALONE, WHAT IS YOUR DAILY PARKING COST?

- ☐ 0¢
- ☐ 5¢ - 50¢
- ☐ 55¢ - $1.35
- ☐ $1.40 OR MORE

8. WHICH OF THE FOLLOWING EXPRESS YOUR ATTITUDE ABOUT THE BUS SERVICE AVAILABLE TO YOU FOR TRAVELING TO AND FROM WORK: (CHECK SEVERAL, IF YOU WISH)

- ☐ BUS SERVICE IS ACCEPTABLE.
- ☐ BUS TAKES TOO LONG TO GET ME TO AND FROM WORK.
- ☐ BUS STOP IS TOO FAR AWAY FROM MY HOME.
- ☐ TOO MANY TRANSFERS.
- ☐ BUS IS TOO UNCOMFORTABLE (e.g. I HAVE TO STAND UP FREQUENTLY).
- ☐ BUS SCHEDULE IS UNRELIABLE.
- ☐ TOO FEW BUSES RUN TO AND FROM MY RESIDENCE.
- ☐ BUS IS TOO EXPENSIVE.
- ☐ DO NOT LIKE TO SIT (OR STAND) NEXT TO STRANGERS.
- ☐ OTHER (SPECIFY) _____

9. WHICH ONE OF THE FOLLOWING BEST EXPRESSES YOUR ATTITUDE TOWARD CARPOOLING?

- ☐ CARPOOLING IS AN ACCEPTABLE WAY TO TRAVEL TO AND FROM WORK.
- ☐ CARPOOLING IS TOO STRUCTURED TO CONFORM WITH MY LIFE STYLE OR WORK SCHEDULE.
- ☐ CARPOOLING IS UNCOMFORTABLE (EITHER PHYSICALLY OR MENTALLY).
- ☐ CARPOOLING IS OKAY, BUT I PREFER THE BUS.
- ☐ CARPOOLING IS IMPRACTICAL FOR ME BECAUSE OF WHERE I LIVE.
- ☐ OTHER (SPECIFY) _____

_____

10. HOW MANY PEOPLE ARE IN YOUR CARPOOL (INCLUDE YOURSELF)?

- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6 OR MORE
- ☐ NOT APPLICABLE

11. ARE THE MEMBERS OF YOUR CARPOOL ---

- ☐ RELATIVES ONLY
- ☐ NON-RELATIVES ONLY
- ☐ RELATIVES AND NON-RELATIVES
- ☐ NOT APPLICABLE

12. ARE THE MEMBERS OF YOUR CARPOOL ALL EPA EMPLOYEES?

- ☐ YES
- ☐ NO
- ☐ NOT APPLICABLE

13. WHEN YOU DRIVE FOR YOUR CARPOOL, HOW MUCH DO YOU PAY FOR PARKING?

- ☐ 0¢ (EXCLUDING PARKING TICKETS!)
- ☐ 5¢ - 50¢
- ☐ 55¢ - $1.35
- ☐ $1.40 OR MORE
- ☐ NOT APPLICABLE

14. WHAT BUS ROUTE(S) NUMBERS DO (OR COULD) YOU RIDE?_____

☐ EXPRESS ☐ LOCAL ☐ DON'T KNOW

15. DOES THIS BUS RIDE INVOLVE TRANSFERRING FROM ONE BUS TO ANOTHER BUS?

☐ YES ☐ NO ☐ NON APPLICABLE

16. HOW FAR IS YOUR RESIDENCE FROM THE BUS STOP?

☐ 0 - 1/4 MILE

☐ 1/4 TO 1/2 MILE

☐ 1/2 MILE TO 1 MILE

☐ 1 MILE TO 5 MILES

☐ MORE THAN 5 MILES

☐ NON APPLICABLE

17. HOW DO (OR WOULD) YOU GET TO THE BUS STOP?

☐ WALK

☐ DRIVE ALONE

☐ CARPOOL

☐ DRIVEN BY ANOTHER FAMILY MEMBER

☐ BICYCLE

☐ OTHER (SPECIFY) _____

18. ANY OTHER COMMENTS _____

_____

_____

APPENDIX D

Regulation No. 9

"The Control of Automotive Air Pollution Through the Encouragement of public Transportation and Motor Vehicle Restraints"

Colorado Air Pollution Control Commission

REGULATION NO. 9

The Control of Automotive Air Pollution through Motor Vehicle Restraints and the Encouragement of Public Transportation and Carpooling

I. AREA OF APPLICATION:

This Regulation No. 9 shall apply to the Metropolitan Denver Air Quality Control Region, which includes the counties of Adams, Arapahoe, Boulder, Denver, Douglas, Jefferson, Clear Creek, and Gilpin.

II. PREFERENTIAL TREATMENT OF BUSES:

A. By September 1, 1974 (in cooperation with the Denver Regional Council of Governments, the State Department of Highways and each city and county government within the Metro Denver Air Quality Control Region) the Regional Transportation District (R.T.D.) shall develop and submit to the Commission a feasibility study for demonstrating preferential treatment for buses and carpools within the Metro Denver Air Quality Control Region. By July 1, 1975, R.T.D. shall in the same manner develop and submit to the Commission a regional plan for establishing preferential treatment for buses and carpools within this region. This plan shall include implementation steps, time schedules, and costs for implementing this plan by January 1, 1976.

After the Commission holds a public hearing on and adopts the plan, each party so identified in the plan as responsible for a portion of it shall implement that portion.

In connection with the plan, R.T.D. shall demonstrate to the Division that implementation of the preferential treatment of buses will not increase the potential for additional motor vehicle traffic within the affected area.

B. By October 1, 1974, in cooperation with the Denver Regional Council of Governments, the State Department of Highways, and major local business and employment center Associations, the Regional Transportation District (R.T.D.) shall develop and submit to the Commission a plan for automobile intercept parking facilities and express bus service to employment and business centers. Said plan shall include an implementation time schedule and an evaluation of the effect of plan implementation upon reducing vehicle miles traveled (V.M.T.). After the Commission holds a public hearing and adopts the plan, each party so identified in the plan as responsible for a portion of it shall implement that portion.

C. With respect to the requirements of Sections II.A. and II.B. of this regulation, R.T.D. shall by October 1 of each year submit plan revisions and additions for improving the effectiveness of adopted plans.

III. EMPLOYER PLAN REQUIREMENTS FOR CARPOOLING AND MASS TRANSIT INCENTIVES:

A. By November 1, 1974, the Denver Regional Council of Governments shall submit to the Commission a proposal to establish a uniform carpooling locator service for the Denver metropolitan area.

B. By February 1, 1975, all public and private employers which employ more than two hundred fifty (250) employees at one time in any one plant or other business location shall submit an affidavit, or plan, to the Division on forms provided by the Division. This affidavit shall be signed by an authorized company employee. The affidavit shall state that: 1) The locator service developed as per Section III.A of this regulation will be provided by the employer for use by all interested employees; or that: 2) another carpooling locator service of equal or greater effectiveness will be used. In the case of an alternative locator service, the employer must submit for approval by the Division a plan describing the system and effectiveness of it. The affidavit, or plan, shall provide the following:

1. That the carpooling locator service must be fully implemented by April 1, 1975.

2. That the carpooling locator service shall be for the purpose of matching people to facilitate the transporting of two (2) or more persons per vehicle.

3. A description of employee incentives to encourage the use of carpooling; such as, free or reserved parking adjustments in favor of carpooled vehicles where employee parking is provided, imposition of parking charges on non-carpooled vehicles, or other incentives.

4. A description of measures to encourage employees to use bicycles and public transportation; such as, posting information for employees as to the availability of bicycle lanes and public transportation to and from the place of employment; and providing incentives for use of same (reimbursement of fares for use of public transportation, provision of secure and convenient parking for bicycles, and/or other similar fringe benefits).

C. The Requirements of Section III.B shall apply to all public and private employers which employ more than fifty (50) employees at one time in any one plant or other business location exactly six months later than the time requirements of Section III.B (plan submittal by August 1, 1975 and carpooling locator service implemented by October 1, 19[illegible].

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D. All employers regulated by this Section III shall, on an annual basis coinciding with the plan submittal date, submit on a form provided by the Division a brief progress report as to the effectiveness of implementing measures as required in this Section III.

IV. MOTOR VEHICLE PARKING:

By March 1, 1975, the Denver Regional Council of Governments (in cooperation with the State Department of Highways and Regional Transportation District (R.T.D.) shall provide written advice to the Commission as to the relationship, if any, between restricting the construction of new parking spaces in the Denver area and reducing vehicle miles traveled. It shall also recommend to the Commission parking requirements that may stimulate the use of public transportation and decrease single passenger vehicle miles traveled.

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